

5 CLAIMS

WHAT IS CLAIMED IS:

1. An isolated nucleic acid molecule comprising a polynucleotide having a nucleotide sequence at least 95% identical to a sequence selected from the group consisting of:
  - 10 (a) a polynucleotide fragment of SEQ ID NO:1 or a polynucleotide fragment of the cDNA sequence included in ATCC Deposit No: PTA-2966, which is hybridizable to SEQ ID NO:1;
  - (b) a polynucleotide encoding a polypeptide fragment of SEQ ID NO:2 or a polypeptide fragment encoded by the cDNA sequence included in ATCC Deposit No:
    - 15 PTA-2966, which is hybridizable to SEQ ID NO:1;
    - (c) a polynucleotide encoding a polypeptide domain of SEQ ID NO:2 or a polypeptide domain encoded by the cDNA sequence included in ATCC Deposit No: PTA-2966, which is hybridizable to SEQ ID NO:1;
    - (d) a polynucleotide encoding a polypeptide epitope of SEQ ID NO:2 or a
      - 20 polypeptide epitope encoded by the cDNA sequence included in ATCC Deposit No: PTA-2966, which is hybridizable to SEQ ID NO:1;
      - (e) a polynucleotide encoding a polypeptide of SEQ ID NO:2 or the cDNA sequence included in ATCC Deposit No: PTA-2966, which is hybridizable to SEQ ID NO:1, having biological activity;
      - 25 (f) a polynucleotide which is a variant of SEQ ID NO:1;
      - (g) a polynucleotide which is an allelic variant of SEQ ID NO:1;
      - (h) an isolated polynucleotide comprising nucleotides 57 to 1064 of SEQ ID NO:1, wherein said nucleotides encode a polypeptide of SEQ ID NO:2 minus the start codon;
      - 30 (i) an isolated polynucleotide comprising nucleotides 54 to 1064 of SEQ ID NO:1, wherein said nucleotides encode a polypeptide of SEQ ID NO:2 including the start codon;
      - (j) a polynucleotide which represents the complimentary sequence (antisense) of SEQ ID NO:1; and
      - 35 (k) a polynucleotide capable of hybridizing under stringent conditions to any one of the polynucleotides specified in (a)-(j), wherein said polynucleotide does not

- 5 hybridize under stringent conditions to a nucleic acid molecule having a nucleotide sequence of only A residues or of only T residues.
2. The isolated nucleic acid molecule of claim 1, wherein the polynucleotide fragment comprises a nucleotide sequence encoding a G-protein coupled receptor protein.
- 10 3. The isolated nucleic acid molecule of claim 1, wherein the polynucleotide fragment comprises a nucleotide sequence encoding the sequence identified as SEQ ID NO:2 or the polypeptide encoded by the cDNA sequence included in ATCC Deposit No: PTA-2966, which is hybridizable to SEQ ID NO:1.
4. The isolated nucleic acid molecule of claim 1, wherein the  
15 polynucleotide fragment comprises the entire nucleotide sequence of SEQ ID NO:1 or the cDNA sequence included in ATCC Deposit No: PTA-2966, which is hybridizable to SEQ ID NO:1.
5. The isolated nucleic acid molecule of claim 2, wherein the nucleotide sequence comprises sequential nucleotide deletions from either the C-terminus or the  
20 N-terminus.
6. The isolated nucleic acid molecule of claim 3, wherein the nucleotide sequence comprises sequential nucleotide deletions from either the C-terminus or the N-terminus.
7. A recombinant vector comprising the isolated nucleic acid molecule of  
25 claim 1.
8. A method of making a recombinant host cell comprising the isolated nucleic acid molecule of claim 1.
9. A recombinant host cell produced by the method of claim 8.
10. The recombinant host cell of claim 9 comprising vector sequences.
- 30 11. An isolated polypeptide comprising an amino acid sequence at least 95% identical to a sequence selected from the group consisting of:  
(a) a polypeptide fragment of SEQ ID NO:2 or the encoded sequence included in ATCC Deposit No: PTA-2966;  
(b) a polypeptide fragment of SEQ ID NO:2 or the encoded sequence included  
35 in ATCC Deposit No: PTA-2966, having biological activity;

- 5 (c) a polypeptide domain of SEQ ID NO:2 or the encoded sequence included in ATCC Deposit No: PTA-2966;
- (d) a polypeptide epitope of SEQ ID NO:2 or the encoded sequence included in ATCC Deposit No: PTA-2966;
- (e) a full length protein of SEQ ID NO:2 or the encoded sequence included in
- 10 ATCC Deposit No: PTA-2966;
- (f) a variant of SEQ ID NO:2;
- (g) an allelic variant of SEQ ID NO:2;
- (h) a species homologue of SEQ ID NO:2;
- (i) a polypeptide comprising amino acids 2 to 337 of SEQ ID NO:2, wherein
- 15 said amino acids 2 to 330 comprise a polypeptide of SEQ ID NO:2 minus the start methionine;
- (j) a polypeptide comprising amino acids 1 to 337 of SEQ ID NO:2; and
- (k) a polypeptide encoded by the cDNA contained in ATCC Deposit No. PTA-2966.
- 20 12. The isolated polypeptide of claim 11, wherein the full length protein comprises sequential amino acid deletions from either the C-terminus or the N-terminus.
13. An isolated antibody that binds specifically to the isolated polypeptide of claim 11.
- 25 14. A recombinant host cell that expresses the isolated polypeptide of claim 11.
15. A method of making an isolated polypeptide comprising:
- (a) culturing the recombinant host cell of claim 14 under conditions such that said polypeptide is expressed; and
- 30 (b) recovering said polypeptide.
16. The polypeptide produced by claim 15.
17. A method for preventing, treating, or ameliorating a medical condition, comprising administering to a mammalian subject a therapeutically effective amount of the polypeptide of claim 11 or the polynucleotide of claim 1.
- 35 18. A method of diagnosing a pathological condition or a susceptibility to a pathological condition in a subject comprising:

5 (a) determining the presence or absence of a mutation in the polynucleotide of claim 1; and

(b) diagnosing a pathological condition or a susceptibility to a pathological condition based on the presence or absence of said mutation.

10 19. A method of diagnosing a pathological condition or a susceptibility to a pathological condition in a subject comprising:

(a) determining the presence or amount of expression of the polypeptide of claim 11 in a biological sample; and

(b) diagnosing a pathological condition or a susceptibility to a pathological condition based on the presence or amount of expression of the polypeptide.

15 20. A method for identifying a binding partner to the polypeptide of claim 11 comprising:

(a) contacting the polypeptide of claim 11 with a binding partner; and

(b) determining whether the binding partner effects an activity of the polypeptide.

20 21. The gene corresponding to the cDNA sequence of SEQ ID NO:2.

22. A method of identifying an activity in a biological assay, wherein the method comprises:

(a) expressing SEQ ID NO:1 in a cell;

(b) isolating the supernatant;

25 (c) detecting an activity in a biological assay; and

(d) identifying the protein in the supernatant having the activity.

23. The product produced by the method of claim 20.

24. A process for making polynucleotide sequences encoding a gene product having altered G-protein coupled receptor activity comprising,

30 a) shuffling a nucleotide sequence of claim 1,

b) expressing the resulting shuffled nucleotide sequences and,

c) selecting for altered G-protein coupled receptor activity as compared to the G-protein coupled receptor activity of the gene product of said unmodified nucleotide sequence.

35 25. The process of claim 24, wherein the nucleotide sequence is SEQ ID NO:1.

- 5           26.    A shuffled polynucleotide sequence produced from the process of  
claim 25.
27.    An isolated nucleic acid molecule consisting of a polynucleotide  
having a nucleotide sequence selected from the group consisting of:
- (a) a polynucleotide encoding a polypeptide of SEQ ID NO:2;
- 10           (b) a polynucleotide comprising nucleotides 57 to 1064 of SEQ ID  
NO:1, wherein said nucleotides encode a polypeptide of SEQ ID NO:2 minus the start  
codon;
- (c) a polynucleotide comprising nucleotides 54 to 1064 of SEQ ID  
NO:1, wherein said nucleotides encode a polypeptide of SEQ ID NO:2 including the  
15           start codon;
- (d) a polynucleotide encoding the HGPRBMY11 polypeptide encoded  
by the cDNA clone contained in ATCC Deposit No. PTA-2966;
- (e) a polynucleotide which represents the complimentary sequence  
(antisense) of SEQ ID NO:1;
- 20           28.    The isolated nucleic acid molecule of claim 27, wherein the  
polynucleotide comprises a nucleotide sequence encoding a G-protein coupled  
receptor protein.
29.    The isolated nucleic acid molecule of claim 27, wherein the  
polynucleotide fragment comprises a nucleotide sequence encoding the polypeptide  
25           sequence identified as SEQ ID NO:2.
30.    The isolated nucleic acid molecule of claim 28, wherein the nucleotide  
sequence comprises sequential nucleotide deletions from either the C-terminus or the  
N-terminus.
31.    A recombinant vector comprising the isolated nucleic acid molecule of  
30           claim 28.
32.    A recombinant host cell comprising the recombinant vector of claim  
31.
33.    An isolated polypeptide consisting of an amino acid sequence selected  
from the group consisting of:
- 35           (a)    a polypeptide fragment of SEQ ID NO:2 having G-protein coupled  
receptor activity;

- 5 (b) a polypeptide domain of SEQ ID NO:2 having G-protein coupled  
receptor activity;
- (c) a full length protein of SEQ ID NO:2;
- (d) a polypeptide corresponding to amino acids 2 to 337 of SEQ ID NO:2,  
wherein said amino acids 2 to 330 comprise a polypeptide of SEQ ID NO:2 minus the  
10 start methionine;
- (e) a polypeptide corresponding to amino acids 1 to 337 of SEQ ID NO:2;
- (f) a polypeptide encoded by the cDNA contained in ATCC Deposit No.  
PTA-2966.
34. A method of screening for candidate compounds capable of binding to  
15 and/or modulating activity of a G-protein coupled receptor, comprising:
- a.) contacting a test compound with a substantially or partially  
purified polypeptide according to claim 28; and
- b.) selecting as candidate compounds those test compounds  
that bind to and/or modulate activity of the polypeptide.
- 20 35. The method according to claim 34, wherein the candidate compounds  
are small molecules.
36. A cell comprising NFAT/CRE and the polypeptide of claim 11 or 33.
37. A cell comprising NFAT G alpha 15 and the polypeptide of claim 11  
or 33.
- 25 38. A method of screening for candidate compounds capable of  
modulating activity of a G-protein coupled receptor-encoding polypeptide,  
comprising:
- (a) contacting a test compound with a cell or tissue expressing the  
polypeptide according to claim 11 or 33; and
- 30 (b) selecting as candidate modulating compounds those test compounds  
that modulate activity of the G-protein coupled receptor polypeptide.
39. The method according to claim 38, wherein the candidate compounds  
are agonists or antagonists of G-protein coupled receptor activity.
40. The method according to claim 39, wherein the polypeptide activity is  
35 associated with the kidney.

5           41.    A method of treating a disorder related to aberrant NF-kB activity  
comprising the step of administering an antagonist of the polypeptide provided in  
claims 11 or 33.

          42.    The method according to claim 41 wherein the disorder is a renal  
disorder.

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